NOTICE TO THE TRADE

DATE: February 3, 2023

ATTENTION: All Participants in P.L. 480 Title II Food Aid Shipments

SUBJECT: Container Fumigation- Sulfuryl Fluoride

This notice is to advise commodity vendors and ocean carriers that the following Sulfuryl Fluoride fumigation protocol is effective immediately for food commodity loaded in containers.

Applicability

At this time Sulfuryl Fluoride can be used on the following commodities:

Wheat, Rice, Sorghum, Yellow Splits, Green Peas, Beans, Lentils.

At the present time, Corn Soy Blend (CSB) and Corn Soy Blend + (CSB+) are <u>not approved</u> as they are undergoing testing by the manufacturers.

In all cases, please refer to the latest Product label as provided by the manufacturers for applicability and dosage.

Safety

1. Comply with all department of transportation (DOT) requirements regarding transportation of hazardous materials; commercial driver's license (CDL) requirements; and hours of service.

2. Ensure fumigant compatibility with the commodity and container.

3. Ensure proper storage and handling of pressurized cylinders to prevent damage to valves and injury to associates.

4. Secure the container to be fumigated prior to the fumigation and limit access to only authorized personnel.

5. Ensure proper gas monitoring procedures are in place per product label.

6. If fumigation is indoors, a self-contained breathing apparatus (SCBA) must be used during time of application. Outdoor use of SCBA is based on air monitoring results. Always follow label requirements for minimum Personal Protective Equipment (PPE).

7. Additional PPE required:

    a. Safety-toe over the ankle footwear

    b. Eye protection/face shield

    c. High visibility clothing

8. Review product label for specific clothing requirements when applying, aerating, and clearing.

9. Ensure proper risk and hazard documentation is completed per regulatory and agency requirements.

Regulatory

1. Two persons trained in the use of this product, at least one being an applicator certificated by the state, must be always present on-site during introduction of the fumigant, reentry prior to aeration, initiation of the aeration procedure, when testing for reentry after aeration, and during reentry respectively. Place the appropriate fumigation placard on the container prior to application of fumigant. At a minimum, place a placard on the door of the container and on the side of the container that couples the trailer/container to a truck/tractor hitch.
2. U.S. port facilities require individuals to carry a Transportation Worker Identification Credential (TWIC) to gain unescorted access.
3. Fumigation services relating to containers exported from the U.S. may be subject to oversight by the USDA, USAID as well as local and state agencies who operate as an extension to USDA-APHIS guidelines.
4. Prepare a fumigation management plan according to the label.
5. Notification of fumigation activity to local fire departments and/or fumigation permit may be required. Contact the local fire department to understand if and what information is needed, including how often notification is needed for continuous/ongoing fumigations.
6. For export services, prepare a fumigation certificate after fumigation is completed successfully post aeration.
7. At any time, the fumigator may be audited on high and low range equipment.

Fumigation Preparation

1. Check container/trailer for air tightness for tarpaulin or non-tarpaulin purposes. This could include looking for light or rusted areas inside the container. Kindly ensure that the appropriate quality of Tarpaulin is used.
2. Locate containers/trailers in secure, isolated spots, out of high sustained winds (refer to product label).
3. Contact local authorities, such as the fire department, as required.
4. Ensure commodity and space temperatures are verified per label requirements. Higher temperatures, 68 deg. F and above, are recommended for treatment of insects, larvae and eggs.

5. Inspect container/trailer to ensure it is empty other than contents to be fumigated. Ensure that there is adequate open space available to allow fumigant movement within the container.
    a. USDA quarantine treatments require that not more than 80% of the container is filled with at least 20% open space to allow movement of fumigant in the container.
6. Seal all known holes, vents, hatches, and gaps with approved sheeting, adhesive, and/or tape. Sealing materials should be weatherproof and able to withstand the forecast weather elements.

Application: Fumigation Schedule (Fumiguide™ Program or Similar)

Sulfuryl Fluoride (ProFume® Gas Fumigant) Treatment Schedule *				
Commodity Temperature	**Exposure Period**	**Target Dosage (g-h/m3)**	**Initial Concentration**	**Pounds per 1,000 CF/M3**
30˚ C/86˚ F or above	32 hours	780 CT	53 g/m3	3.4 pounds per 1,000 cubic feet
25˚ C/77˚ F or above	32 hours	1179 CT	81 g/m3	5 pounds per 1,000 cubic feet
20˚ C/68˚ F or above	32 hours	1478 CT	101 g/m3	6.3 pounds per 1,000 cubic feet

Douglas Products Fumiguide™ Program is an "approved third party system."

The Fumiguide can be used to record monitoring readings and calculate total accumulated CT.

*The pests for which ProFume is used in the table include all life stages (egg, larva, pupa and adult) of pests such as Indian meal moth, Mediterranean flour moth, flour beetles, saw toothed grain beetle, warehouse beetle, granary weevil, rice weevil, cigarette beetle, cocoa moth, bean weevil , cowpea weevil, almond moth, rust red grain beetle, drugstore beetle, hide beetle, lesser grain borer and rats and mice.

If the target pest is outside of the scope above, the Fumiguide must be used for the dosage and treatment of the commodity.

Fumigant Introduction and Monitoring

Sulfuryl Fluoride

I. Place sampling and appropriate pressure rated (refer to labels) introduction (shooting) lines secured and directed to the open space on top of commodity in center of the container.
II. Attach other end of sampling line(s) to appropriate monitoring device as per label or regulatory requirements.
III. Attach the other end of the introduction line to the fumigant dispensing device.
IV. Set a fumigant cylinder on a scale to measure the amount of product dispensed. Either platform or hanging scales can be used to weigh the Sulfuryl Fluoride cylinder during fumigant introduction. Scales should be routinely calibrated to assure correct readings. Refer to the scale manufacturer for calibration and maintenance details.
V. Circulation (e.g., fan[s]) of fumigant may be required as per product label.

VI. Place a minimum of two monitor sampling lines inside the container. The monitor lines should be in the center of the commodity and in the headspace.

VII. Close and secure container (e.g., with a lock).

VIII. Place the appropriate fumigation placard on the container prior to application of fumigant. At a minimum, place a placard on the door of the container and on the side of the container that couples the trailer/container to a truck/tractor hitch.

IX. Release Sulfuryl Fluoride from the cylinder placed outside the container through an introduction system (introduction lines, connectors, etc.) with a minimum 500 psi burst pressure rating. Introduction and monitor lines must be placed in gaps between the doors. All doors must be completely closed (locked) without pinching the tubing. If the tubing becomes pinched, you can readjust or insert stainless steel needle tips through the weatherproofing. Fans may be used to distribute the gas uniformly within the container. Monitoring gas concentrations within the container can confirm the distribution of gas within the container.

X. A shooting fan/circulation fan is recommended when introducing Sulfuryl Fluoride. A small circulating fan inside the container will provide a gentle movement of air adequate to achieve even gas distribution throughout the container.

XI. However, if a large open space is not available, or if use of an introduction fan is dangerous or impractical, an introduction/circulation fan is not required. If a fan is not used, ensure introduction will not result in a fog-out within the fumigation container. Slow introduction rates (1 to 4 lbs. per minute) are recommended to prevent excessive cooling of air near the introduction site.

XII. Note: Never apply liquid fumigant directly onto food commodities.

XIII. For Sulfuryl Fluoride (PROFUME® gas fumigant):

- Introduce fumigant by opening valve ¼ turn to check for any leaks. After inspection is complete, a full rotation. Verify the fumigant release with digital cylinder scales to ensure the proper dose.
- Monitor fumigant product levels in the work area according to label and jurisdiction requirements. At any time during the hold time the concentration falls below the recommended half loss time (HLT), add gas must be applied to reach the target dosage. This data should be obtained and recorded within the first 4-8 hours.

XIV. Record required data (e.g., amount of fumigant used, time, date, temperature, concentration readings from inside the container, etc.).

XV. Monitor product concentration inside trailer/container according to label, customer, and country requirements. Add fumigant as needed for efficacy purposes.

- The first concentration reading should be taken within 60 minutes after fumigant introduction. Second and third reading should be every 2 hours. The minimum would be the first concentration reading taken within 60 minutes of fumigant introduction, a second reading taken an hour after the initial reading, and a final reading taken prior to opening the container and initiating the aeration process. Consult the Fumigation Management Plan or Fumiguide™ Program or similar for the half loss time (HLT) and efficacy.

XVI.

Monitoring of Fumigant

1. Monitoring the gas concentrations within the container during the exposure period can be done with direct read or remote read monitors. These can be used to confirm the dose and half loss time (HLT) in the Fumiguide™ Program or similar.

2. Recommended monitoring site locations include one at high, medium, and low heights and in the front, middle and back of the container. The minimum would consist of the middle and headspace towards the back of the container, or as close to these areas as accessible Multiple readings should be obtained throughout the fumigation period to ensure the fumigation will reach the desired dosage within the desired exposure time period.
3. The first concentration reading should be taken within 60 minutes after fumigant introduction. Second and third readings should be every 2 hours. The minimum would be the first reading taken within 60 minutes after fumigant introduction, a second reading taken an hour after the initial reading, and a final reading taken prior to opening the container and initiating the aeration process. Consult the Fumiguide™ Program or similar for half loss time (HLT) and efficacy. Input the monitoring data into the Fumiguide™ Program or similar to calculate accumulated dosage and obtain the fumigation status. Prior to opening the container, a final concentration must be taken and verified by the Fumiguide™ Program or similar, that the target dosage has been achieved.
4. The objectives of monitoring fumigant concentration are:
    a. To allow the Fumiguide™ Program or similar to determine the optimal amount of fumigant needed to control the target pests under the actual fumigation conditions.
    b. To allow the interactive Fumiguide™ Program or similar to calculate CT (Concentration & Time - dosage) needed and achieved to ensure a successful fumigation.
    c. To allow the Fumiguide™ Program or similar to calculate the actual half loss time (HLT) vs. just estimating the HLT.
    d. To create a reasonable history of Fumiguide™ Program or similar file records so that enhanced Precision Fumigation™ techniques can be built upon in subsequent fumigations.

Aeration/Clearance of the Container

1. SCBA Respiratory protection is required when the concentration of the fumigant is above 1 ppm or unknown.
2. Ensure the final concentration reading and efficacy has been achieved.
3. Open container/trailer to aerate according to label directions. Use proper PPE and comply with OSHA respiratory requirements. The size of the fan will depend on the size of the container and the aeration time requirements. A fan capable of changing the air in the container in 5 to 10 minutes is recommended. The container must exhaust all the fumigant gas outside and away from adjoining buildings or work areas. Consult your state agency for emission control requirements.
4. Use only approved labeled and calibrated low range measuring devices to document product and ensure that the container is thoroughly aerated.
5. Remove sealing material.
6. Document start time of aeration as required by country, customer, and label.
7. Monitor final reading of aerated container to ensure it is clear of fumigant according to label requirements.
8. Remove all warning placards.
9. If occasional invaders are visually seen during the aeration period take the appropriate steps to eliminate by a residual application.

Release Container to Customer

1. Secure containers according to customer and/or country requirements.
2. Ensure that the proper plastic or metal security seal matches the container's unique identification number.
3. Provide Fumigation Certificate to customers.

Follow up with the customer to review the treatment and release the container/

trailer to the customer.

Any questions concerning this Notice should be directed to the USAID Transportation Division at m.oaa.tcmaillistusaid@usaid.gov.